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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

ART UNIT	PAPER NUMBER
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DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/434,318

Applicant(s)

CHIEN ET AL.

Examiner

Theresa T Doan

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4
- 18) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "p-type GaN-based III-V Group compound semiconductor layer adjacent to said main surface and a n-type GaN-based III-V Group compound semiconductor layer adjacent to said p-type semiconductor layer" must be shown or the feature(s) canceled from the claim 8. No new matter should be entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 1-3 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Takeuchi et al. (US006130446A).

With respect to claims 1 and 7, Takeuchi et al. disclose a flip-chip light-emitting device, comprising:

a transparent substrate 1 (see figure 4A);

a semiconductor stacked structure arranged over a main surface of the transparent substrate wherein the stacked structure comprises an n-type GaN-based III-V Group compound semiconductor layer adjacent to the main surface and a p-type GaN-based III-V Group compound semiconductor layer adjacent to the n-type semiconductor layer (see figure 4A, column 7, lines 24-30);

a first electrode 5 being in electrical contact with the n-type semiconductor layer (see figure 4c, column 7, lines 38-45); and

a second electrode 4 being in electrical contact with the p-type semiconductor layer; wherein said second electrode has good reflectivity of light and covers most of the outer surface of the p-type semiconductor layer (see figure 4B, column 7, lines 30-36); and the second electrode is a multi-layer structure of nickel/gold/titanium/aluminum (Ni/Au/Ti/Al) (see column 7, lines 30-32).

With respect to claim 2, Takeuchi et al. disclose the stacked structure further comprises an active layer placed between said n-type semiconductor layer and said p-type semiconductor layer (see figure 4A, column 7, lines 24-30).

With respect to claim 3, Takeuchi et al. disclose an insulating layer at least coated on the side surface of the stacked structure, a portion of said first electrode and a portion of said second electrode (see figure 4D, column 8, lines 18-22).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. (US006130446A) in view of Okazaki (US005990500A).

Takeuchi et al. as described above, fail to disclose a base which has a first and a second conductive portions respectively connected to the first and second electrodes; and the base can be a conductive lead frame, a glass lead frame, a circuit board or a thin-film circuit. However, Okazaki teaches a base which has a first and a second conductive portions respectively connected to the first and second electrodes; and the base can be a conductive lead frame (see figure 7, column 1, lines 37-48). It would have been obvious to one having ordinary skill in the art at the time of the invention was made to form the base of Takeuchi as taught by Okazaki for improving the mechanical strength of flip-chip device structure.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. (US006130446A) in view of Shim et al. (US006100103A).

Takeuchi et al. disclose all the features of the invention claims except that forming the second electrode is a multi-layer structure comprising a light-transmitting conductive layer and a layer of aluminum (Al) or silver (Ag). However, Shim et al. disclose the second electrode is a multi-layer structure comprising a light-transmitting conductive layer and a layer of aluminum (Al) (column 6, lines 31-45). It would have been obvious to one having ordinary skill in the art at the time of the invention was

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made to use aluminum or silver for the second electrode of Takeuchi as taught by Shim for having a good conductivity.

7. Claims 8-12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. (US006130446A) in view of Okazaki (US005990500A).

With respect to claims 8-12, and 14, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to interchange the conductivity type of p-type semiconductor layer to n-type semiconductor layer and vice versa.

8. Claims 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. (US006130446A) in view of Shim et al. (US006100103A).

With respect to claims 8 and 13, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to interchange the conductivity type of p-type semiconductor layer to n-type semiconductor layer and vice versa.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Theresa T Doan whose telephone number is (703) 305-2366. The examiner can normally be reached on 8:00AM - 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, OLIVIA CHAUDHURI can be reached on (703) 308-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703)

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308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

TD
Patent Examiner
December 29, 2000



OLIK CHAUDHURI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800